

Area of study:  
**03.04.03 Radiophysics**  
Program  
**Radiowaves Physics**

Degree: master

Program length and study mode: 2 years,  
intramural

Language: Russian

Start date: September 1, 2020

Location: Rostov-on-Don

**Entry requirements:**

Bachelor or specialist's degree in natural science or technical infocommunication, radiophysical and radio engineering.

**Program overview:**

The program is aimed at training the highly qualified scientific and pedagogical personnel capable of performing innovation activity in research and educational organizations, etc. The overriding program's priority is training the specialists capable of conducting fundamental and applied research in radioelectronic, military, industrial or high technology organizations.

In this regard, the **main objectives** of training are:

- development of independent research skills, gaining scientific work experience;
- in-depth study of theoretical and methodological foundations of radio wave physics, including radio frequency, microwave, terahertz and optical frequency ranges;
- enhancement of fundamental and applied knowledge, including a foreign language for professional activity;
- development of competencies necessary for successful scientific and pedagogical work.

**Program structure:**

**Typical units of study may include:**

- History and methodology of science. Philosophy and philosophical questions of natural science.
- Foreign language for professional communication.
- Mathematical methods in Radiophysics.
- Spectroscopy of random signals. Physics of information and control systems.
- Fundamentals of Quantum optics, Informatics and Sub-Doppler spectroscopy.
- Computer technology. Modeling of microwave devices and optical bands

**Electives:**

**University academic mobility module:**

**Careers:**

- the world-class radio-electronic enterprises. There are great opportunities for professional and scientific growth;
- cellular companies;
- IT companies;
- engineering companies.

**Get in touch:**

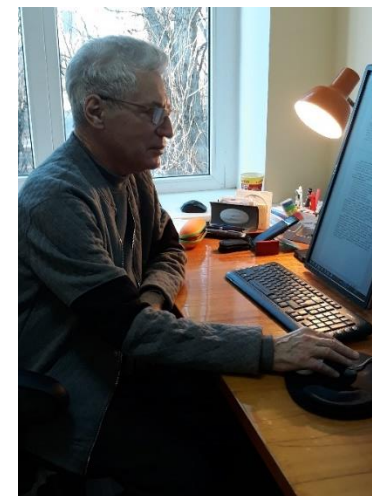
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|  | <p>Computer simulation: tasks and solutions</p> <p>Foreign language (English): writing the scientific articles in accordance with the international standards</p> <p><b>Professional modules:</b></p> <p>Additional chapters of digital signal processing.</p> <p>Mathematical methods of applied electrodynamics</p> <p>Interaction of laser radiation with matter and nonlinear optics.</p> <p>Physics of gas discharge.</p> <p>Modern digital circuit engineering. Mobile communication systems.</p> <p><b>Special professional modules:</b></p> <p><b>Special professional module 1:</b></p> <p>Selected chapters of microwave and optical physics and technology.</p> <p>Modern methods of spectral estimation. Modeling the antenna-feeder devices.</p> <p>Lasers in measuring systems. Modeling the processes in lasers.</p> <p><b>Special professional module 2:</b></p> <p>Methodological seminar on microwave physics and technology and special radiophysical workshop</p> <p>Methodological seminar on Quantum radiophysics and special radiophysical workshop</p> <p>Methodological seminar on Radiophysics and special radiophysical workshop</p> <p><b>Research areas:</b></p> <p>The areas are determined by the radiophysical research areas, developed at the Faculty of Physics at SFedU, as well as scientific areas developed at the radioelectronic enterprises of Rostov-on-Don, which are the main employers for graduates.</p> <p>For several decades, the following radiophysical areas have been formed and actively developed at the Faculty of Physics: Applied electrodynamics, Microwave physics and technology; Quantum</p> |  |
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|  | <p>radiophysics, Laser physics; Ionosphere and radio wave propagation physics; Digital signal processing methods.</p> <p>Our scientific schools on applied electrodynamics, laser physics, ionosphere physics and radio wave propagation are well known in Russia and abroad. 13 doctors of science, professors, 25 candidates of science, associate professors are working in these areas. Fundamental and applied research is carried out within the framework of grants and contract-based works, dozens of articles are published annually in leading Russian and international journals.</p> |  |
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